THE SCIENTIFIC AMERICAN.

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THE SCIENTIFIC AMERICAN,
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By RUFUS PORTER.

Each number of this paper is furnished with from two to five ORIGINAL ENGRAVINGS, many of them elegant, and illustrative of NEW INVENTIONS, SCIENTIFIC PRINCIPLES, and CURIOSITIES; and contains as much Interesting Intelligence as six ordinary daily papers, consisting of notices of the progress of Mechanical and other Scientific Improvements,—American and Foreign Inventions; Catalogues of American Patents,—Scientific Essays, illustrative of the principles of the Sciences of MECHANICS, CHEMISTRY, and ARCHITECTURE;—Instruction in various Arts and Trades;—Curious Philosophical Experiments;—Miscellaneous Intelligence, Poetry and, occasionally, Music.

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TERMS OF ADVERTISING.—For 10 lines, or less, 50 cents for the first, and 12 1-2 cents for every subsequent insertion.

Winter and Want.

A Child's Winter-thought of his comforts and of the Poor.

Hurra for cold weather! hurra for the snow!
Now, light as a feather, in drifts see it blow,
Like white down of thistles the flakes fill the air;
The merry wind whistles at frolic so rare.

The window-blinds clatter, the chimney-draught roars!
Blow on, wind! no matter, we're safe within doors;
The snow-banks are spreading fast over the street;
What fun to be treading the paths with our feet.

And then—we'll go sleighing, in warm raiment clad;
With fine horses neighing, as if they were glad;
The shining bells jingle, the swift cutter flies,
And, if our ears tingle, no matter,—who cries?

What can be the reason folks call winter drear?
There's no gayer season for boys in the year;
On skates see us gliding, and we've other sports:
As snow-balling, sliding, or building snow-forts.

At home, too, how pleasant; bright fires and good cheer;
With a nice Christmas present, and one at New Year.
Through storms dark and ugly our fireside is light;
And we're covered snugly in warm beds at night.

But stay; while, so gladly, these comforts I trace;
Another view sadly comes up in their place.
While plenty and blessing lie heaped at our door,
How dark and distressing the case of the Poor!

In old, crumbling shanty, thin-robed and threadbare,
With bedding too scanty, and coarse, stinted fare;
With hardly a splinter of wood to the fire,
Ah! little in winter have they to admire.

Mid comforts abounding, well-clothed and full fed,
The bright fire surrounding, or cosy in bed,
Our lips do not quiver, all hungry and weak;
Nor, heart-chilled, we shiver, too wretched to speak.

But these, the wan creatures of anguish and cares,
From whose sharpened features lean Misery stares;
These—often, whose tearful appeal men condemn—
How dismal, how fearful, is winter to them!

Poor sufferers! sadly your wants I deplore,
I'll share with you gladly my own little store.
I've play things so many, when fewer would do,
And I'd part with any, to buy bread for you.

Some clothes too I'll gather you; Ma says I may;
And. to our great Father in Heaven I'll pray;
He will not forsake you; your tears He can dry;
And then, at last, take you to mausions on high.

Matrimony.

1—That man must lead a happy life,
2—Who's free from Matrimonial chains,
3—Who is directed by a wife,
4—Is sure to suffer for his pains.

1—Adam could find no solid peace,
2—When Eve was given for a mate,
3—Until he saw a woman's face,
4—Adam was in a happy state.

1—In all the female face appear
2—Hypocrisy, deceit and pride;
3—Truth, darling of a heart sincere.
4—Is almost imperceptible.

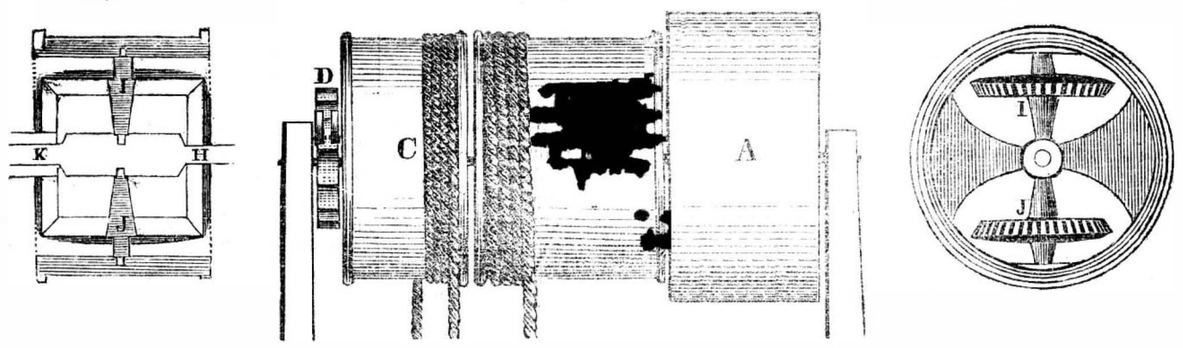
1—Cursed be the foolish man I say,
2—Who changes from his singleness,
3—Who will not yield to woman's sway
Is sure of perfect blessedness.

To advocate the ladies' cause, you will read the 1st and 3d, and 2d and 4th lines together.

HOW TO SECURE AN ELECTION.—A man was some years since elected to Congress from a certain district, who was totally unqualified, in every respect, for the position. A friend at Washington once asked him:—"How the deuce did you manage to get elected, sir?" "I stole a pig." "How—what how? Is stealing pigs considered a qulification to Congress?" "No, but as soon as it was known the t'other side took it up, and of course ourn had to defend me. A great noise was made about it, we called it an attempt to 'destroy the spotless reputation of an innocent man,' the people got roused and I got in." At the next election his opponent was elected. His friend, meeting him one day, asked how it happened. "Oh, blast the feller," he replied; "he smelt the rat, and got the start of me. He stole a sheep.

THE CONSTANT RETAINER.

Fig 2 Fig 1 Fig 3



EXPLANATION, &c.—In our last number we mentioned this invention as connected with the Telegraph Machine. We shall now endeavor to illustrate its peculiar construction, in a manner to show its effective utility and applicability, not only to the telegraph, but to clocks and various other machinery. Fig. 1 shows three drums or barrels, mounted on the same axle. The first barrel, A, represents the drum of the telegraph machine, or the movement barrel of a clock or other machine that is to be operated. This drum is not firmly attached to the centre axle, but a bevel-geer wheel (H, fig. 2) is attached to the drum, and the teeth of this wheel take to those of two other wheels, (I J, fig. 2,) attached to the barrel B, described as follows:—The barrel B is attached firmly to the centre shaft, and contains two orifices lengthwise between the rim and the centre as shewn I J, fig. 3; and within these orifices are mounted two bevel-geer wheels [I J, fig. 3,] the axles of which extend from the centre axle or shaft, to the rim, as shewn in figures 2 and 3. A fourth geer wheel, K, is attached to a short hollow arbor, which plays freely on the main shaft, and this wheel also takes to both of those within the barrel, (as shewn at K, fig. 2.) By this arrangement it will be seen that if the hollow arbor be made to revolve twice, while the barrel A remains stationary, the barrel B will revolve once; and if a cord be coiled round this barrel, and a weight attached thereto, the weight will be raised a space equal to the circumference of the barrel. To the opposite end of this hollow arbor, is attached a ratchet wheel, and a fall, [or as termed in clock-work, a *click*,] is attached to the bearing post or beam, and plays into the teeth of the ratchet in a manner to prevent its revolving in the direction of the ordinary motion of the main shaft, but to allow it to move freely in the opposite direction. The barrel C is mounted on the hollow arbor, on which it turns freely in the direction of the ordinary motion of the centre shaft, but has another click attached to itself, which also takes to the ratchet in such a manner that the barrel can not revolve in the opposite direction, without carrying the ratchet, hollow arbor, and geer wheel with it. Therefore if a cord be coiled round this barrel and descends on the side opposite to that of the weight, and is attached to a treadle, the weight may be raised at any time by simply depressing the treadle with the foot, and yet without in the least relieving the barrel A from the ordinary influence of the weight. It will be requisite, however, to suspend a small weight to the barrel C, opposite, and as a counterpoise to the treadle, so that the latter may be elevated by the descent of the former. This retaining apparatus may be constructed on a scale less than one-tenth of that represented in the engraving; and if it should be attached to the movement of a clock, and a brass wire 2000 feet in length attached to the cord of the pulley C, the opposite end being fixed stationary, the expansion and contraction of the wire by the ordinary daily changes of temperature of the atmosphere, would be sufficient to keep the weight constantly elevated, and the clock constantly and perpetually in operation.

FUNNY OF THE CHINESE.—Fletcher Webster in his recent lecture on China and the Chinese, furnishes the following peculiarities of the Celestials:—The adroitness of the Chinese rogues was as great as the vigilance of the Police. The burglars there sometimes strip themselves stark naked, oil their bodies all over, conceal knife-blades in their hair, and then slip through the hands of those who attempt to secure them, or cut the fingers of whoever would grasp them by the hair. It is not strange that Chinese burglars should have ways of their own as every thing in China is the reverse of what it is with us—They mourn in white—their compass points South—they put their saucers on their cups—the sun goes round the earth—the earth is a perfectly square, flat body—they punish the innocent to find out the guilty—they shake their own hands instead of those of their friends—they *whiten* the soles of their boots—the *left* hand is the post of honor—and how is it to be supposed that their thieves should be like ours? In China one thing is certain; crime brings punishment as sure as evaporation brings rain. For every crime *somebody* must be punished—and, like rain, punishment might be said to fall "alike upon the just and upon the unjust."

ANECDOTE OF ROYALTY.—*The Wife versus the Queen.*—Janin, a writer in the Journal des Desbats, tells the following little story:—"While her Majesty and the Prince were in Germany, one day they had a little skirmish,—'born of excessive love and bad weather,'—and the Prince shut himself in his own apartment. In half an hour afterwards the Queen went and tapped smartly at the door. 'Who is there?' inquired the prince. 'The Queen,' was the brief reply. No answer from within. Shortly afterwards her Majesty gave rather a gentle tap at the door. 'Who is there?' 'The Queen,' was the reply, but it was in softened tone. No answer. A third but a very gentle tap was given. 'Who is there?' in most musical and affectionate tones. The reply given was—'It is *Victoria—Albert!*' The door flew open, and the fond couple were locked in each other's arms instantaneously."

A MEXICAN CARRIAGE.—The lower grade of Mexicans in California, have a singular carriage and harness. They fasten a rope to an ox hide—put the wife and children on the hide and the articles they desire to carry to market—fasten one end of the rope to the pummel of the saddle on a horse, which saddle is well fastened to a horse—jump upon the horse and travel off to any desirable point.—The Yankees, who are now settling the country, are manufacturing carriages with wheels, which is regarded as a great improvement on the old plan.

SLAVERY IN MARYLAND.—Baltimore city, having a population of upwards of one hundred thousand souls, has but three thousand two hundred and twelve slaves. The aggregate population in the principal slaveholding counties of Maryland has diminished considerably since 1790. While the slave population is decreasing, the free blacks are on the increase. There are about 90,000 slaves and 61,000 free blacks in Maryland.

A BOLD PHILOSOPHER, in Philadelphia, has assumed the ground that cats are made of kittens.—*Boston Post.*

The question has since been submitted to the *Pussy*-ites.—*Cin. Inquirer*

Yes, and it has created quite a *mew*-tiny among them.—*Picayune.*

Purr-haps this *cat*-egory may yet be settled *feline*-ly. We *paw*-se, having added our *claw*-se to this *litter*-ature.—*Providence Transcript.*

TIDES.—According to the recent accurate observations, the tide wave travels from the Cape of Good Hope to Gibraltar, a distance of nearly 5000 miles, in the incredibly short period of 12 hours, which is at the rate of above 400 miles an hour. The same wave requires 12 hours to reach Edinburgh from Gibraltar, a distance of 1200 miles, and proceeds with a velocity of 100 miles an hour; whereas that from Edinburgh to London, only 500 miles, requires the same time of 12 hours, and goes at the rate of 42 miles an hour. These retardations in the rate of velocity of the tide wave are occasioned by the obstruction it receives from the coast it comes in contact with. At Liverpool it is found that a fall of one-tenth of an inch in the barometer raises the tide one inch, which is a beautiful illustration of the law of gravitation.

NEW ENGLAND AND VIRGINIA.—A large number of New England and New York farmers have within a few years, gone into Virginia, principally Fairfax county, and purchased the waste land, that is, the land exhausted by bad cultivation. They have gone to work in the New England style, with "their own hired" *help*, and are redeeming the soil and bringing back the means of wealth, which Providence placed in the bosom of the earth. The success of this enterprise has been beyond all expectation. The grateful earth responds bountifully to the labors of the husbandman, and not a drop falls from his brow, that does not promote the fertility of the soil. A correspondent of the Alexandria Gazette, who is a close observer of this inroad upon the manners and customs of the Virginians, has written a series of admirable papers upon the improvements made, and recommends that Virginians shall adopt the mode of life, and encourage the means of labor, which proves to be so eminently successful to their new neighbors.

FIGURE AND DIAMETER OF THE SUN.—The figure of the sun is a spheroid, higher under the equator than about the poles. His diameter is computed to be about 894,000 miles. His solid bulk is 24 millions of times as big as that of the moon, and half a million times bigger than that of the earth. His distance from the earth in round numbers' is 95 millions of miles, a distance so prodigious, that a cannon ball, which moves at the rate of about eight miles a minute, would be something more than twenty-two years in going from the earth to the sun. This account of the diameter, magnitude, and distance of the sun, is deduced from the determinations of the most eminent astronomers in Europe, who were sent out to the most convenient parts of the earth for the purpose of observing the transits of Venus over the Sun, in the years 1761 and 1769.

GIVE YOUR CHILDREN A NEWSPAPER.—A child beginning to read becomes delighted with a newspaper, because he reads of names and things which are familiar, and he will progress accordingly. A newspaper in one year is worth a quarter's schooling to a child, and every father must consider that substantial information is connected with advancement. The mother of a family being one of its heads, and having more immediate charge of children, should herself be instructed. A mind occupied becomes fortified against the ills of life, and is prepared for any emergency. Children amused by reading or study, are of course more considerate and more easily governed. How many thoughtless young men have spent their earnings in a tavern or grog-shop, who ought to have been reading! How many parents who have not spent twenty dollars for books in their families, have given housands to reclaim a son or daughter who had morantly or thoughtlessly fallen into temptation.

LUDICROUS CONTRIBUTION.—A young scamp lately won 200 cents at play, with the express condition that the winner should put the cents into the church contribution box on the succeeding Sunday. When the box came round, our gamester very seriously dropped a handful of coppers in; the box bearer with an amazed look was moving off, when he was told to stand still, as there were a few more of the same sort left, and in went another handful with a crash that attracted all eyes to the ludicrous scene. The steward held on with both hands to the precious box, while the young wag, not a smile on his face, continued to pour in the pennies. As the last handful was doused there was a laugh so loud, that the minister made a very short prayer, and dismissed the congregation to enjoy the joke at leisure outside of consecrated walls.

THE STEAM ENGINE.—Talk of political revolutions, they are nothing to the revolutions of science.—Amid the roar of a conflict which shook Europe, the ancient dynasty of France fell prostrate, and crumbled with the ruins of its own Bastile. And now new Bastiles are being created—new forts being erected—the tools with which tyranny played its game of yore; the chains are again clanking on the people who once so nobly burst them. But there is no such re-action in the revolution of science.—The echo of the cherry hiss of the old tea-kettle, when the boy Watts sat dreamingly listening to it, is to be heard in the loud roar of the steam-pipe, rising often above the din of wind and waters, and proclaiming to both that a mighty power is battling their fierceness.

TAKING HIM AT HIS WORD.—The Cincinnati Times relates the following as a 'positive fact.' A German on horseback was riding along near a party shooting at a mark, in the western part of Cincinnati a few days ago, when, all at once, the horse refused to budge a peg; the rider cut aud slashed, and spurred, but all to no purpose. "D-n de horse! exclaimed the Dutchman—"he vont vent a step! Shentlemens! shentlemens!" he addressing the crowd which had gethered around. "I vish some of you as hash cot a kun vould shoot de dam brute." No sooner said than one of the shooting party, at some distance, levelled his rifle, and put his ball into the horse's head, and laid him dead to the astonishment of the rider, who fell with the horse. He got up, rammed his hands into his pockets, blowed like a porpoise, turned on his heel and walked off without saying a word.

SORE THROAT.—An exchange paper says—We have known several instances in which this distressing complaint, even in its worst stages, have been immediately alleviated and speedily cured by the following remedy. Mix a penny worth of pounded camphor with a wine glass full of brandy, pour a small quantity on a lump of sugar, and allow it to dissolve in the mouth every hour. The third or fourth-generally enables the patient to swallow with ease.

Be very careful that you don't swallow the brandy before the other ingredients.

THE MILITIA OF THE UNITED STATES.—The number of militia enrolled and subject to draft in the United States is, according to the Army Register, 2,759,710. From the date of many of the returns, they must necessarily be far below the true standard, but they may safely be stated at 2,000,000 men. One tenth of the actual militia force of the country would give an army of 200,000 men. This is the number contemplated in the resolutions for organizing the militia, which, it is said, Col. Benton intends to report in the Senate-

Hudsons' Bay Company.

A hundred and forty years ago, or more, Charles II. chartered the "Hudsons' Bay Comyany," and gave it exclusive privileges of establishing trading factories on Hudson's Bay and its tributary rivers. It took possession of the territory, and enjoyed its trade without opposition till 1787, when a rival company—the "North American Fur Company of Canada"—sprung up. This latter was composed entirely of Canadians, and was noted for its energy and enterprise. The jealousies naturally arising between rivals, led to the most barbarous battles, and the sacking and burning of each other's posts.—In 1821, Parliament interfered and consolidated them into one, under the title of the "Hudsons Bay Company." They occupy a vast country, and their operations are those of a vast monopoly. All the British possessions north of the Canadas to the Arc-Arctic Ocean, are in their hunting and trapping grounds. They have leased for twenty years from 1840, all of Russian America, except the post of Sitka. Thus this powerful Company control more than one-ninth of the soil of the globe. Its capitalists are in England, and its board of managers transact their business at the "Hudsons Bay House," in London. This board buy all the goods and ship them to this territory, sell the furs and transact all the business of the company, except the actual business of collecting furs in their territory. The annual value of their peltries is above a million of dollars. The nett profit of the fur trade is immense. The shares of the company's stock, which originally cost one hundred pounds, are at one hundred per cent premium, and the dividends range from 10 per cent, and upwards, and this too, while they are creating an immense fund, to be expended in keeping other persons out of the trade.

In 1811, the American Pacific Fur Company, of which John Jacob Astor was the prime mover, built Fort Astoria, near the mouth of the Columbia. In 1813, during the last war, this American Company sold all its establishment in Oregon to the British Company—now the Hudson's Bay Company. In the same year, a British sloop-of-war entered the Columbia and formally took possession of Fort Astoria, and changed its name to Fort George. In 1815, by the treaty of Ghent, England surrendered this fort to our Government. Then it was, by the same treaty, that British subjects were granted the same rights of trade and settlement in Oregon as belonged to the citizens of this Republic, for ten years. In 1826, this stipulation was indefinitely extended, and cannot cease to be in force till after 12 months' notice.

This is the manner in which the Hudson's Bay Company came into Oregon. The value of furs which are actually collected in Oregon by this Company, is about $140,000 in the London market. Parliment extended the jurisdiction of the Canadian courts over the country occupied by these fur traders, whether it were "owned or claimed by Great Britian." Under this act, certain gentlemen of the Fur Company were appointed Justices, and empowed to entertain prosecutions for minor offences.—arrest and send to Canada criminals of a higher order—and to imprison debtors in their forts and jails. So it is that the trade, and the civil jurisdiction in Oregon, are held by Britisn subjects—that American citizens are deprived by a monopoly of their commercial rights—that they are liable to be arrested on their own territory by officers of British courts, tried in the American domain by British Judges, imprisioned or hung for acts done within the jurisdictton of our own Republic.

The Organs of Perspiration.

Taken separately, the little perspiratory tube, with its appended gland, is calculated to awaken in the mind very little idea of the importance of the system to which it belongs; but when the vast nnmber of similar organs composing this system are considered, we are led to form some notion, however imperfect, of their probable influence on the health and comfort of the individual. I use the words "imperfect notion," advisedly, for the reality surpasses imagination, and almost belief. To arrive at something like an estimate of the value of the perspiratory system in relation to the rest of the organism, I counted the perspiratory pores on the palm of the hand, and found 3,528 in a square inch. Now, each of these pores being the aperture of a little tube of about a quarter of an inch long, it follows that in a square inch of skin on the palm of the hand, there exists a length of tube equal to 882 inches, or 73 1-2 feet. Surely such an amount of *drainage* as seventy-three feet in every square inch of skin, assuming this to be the average for the whole body, is something wonderful, and the thought naturally intrudes itself—What if this *drainage* were obstructed? Could we need a stronger argument for enforcing the necessity of attention to the skin? On the pulps of the fingers, where the ridges of the sensitive layer of the true skin are somewhat finer than in the palm of the hand, the number of pores on a square inch a little exceeded that on the palm and on the heel, where the ridges are coarser, the number of pores on a square inch was 2,268, and the length of tube 567 inches or 47 feet. To obtain an estimate of the length of tube of the perspiratory system of the whole surface of the body, I think that 2,800 might be taken as a fair average of the number of pores in the square inch, and 700 consequently of the number of inches in length. Now the number of square inches of surface in a man of ordinary height and bulk is 2,500; the number of pores, therefore, 7,000,000, and the number of inches of perspiratory tube 1,750,000, that is 145,833 feet, or 48,500 yards, or nearly 28 miles.—*Wilson.*

BOOK KEEPING ITEM.—"You have been a good scholar in your day, Ned, quite conversant with book keeping, I presume? "No, sir, can't say that I am; but what is the reason you ask such a question? "Because I know to my sad experience, for you have no less than a dozen of my books, and, alas! not one of them returned—all owing to your book keeping abilities.

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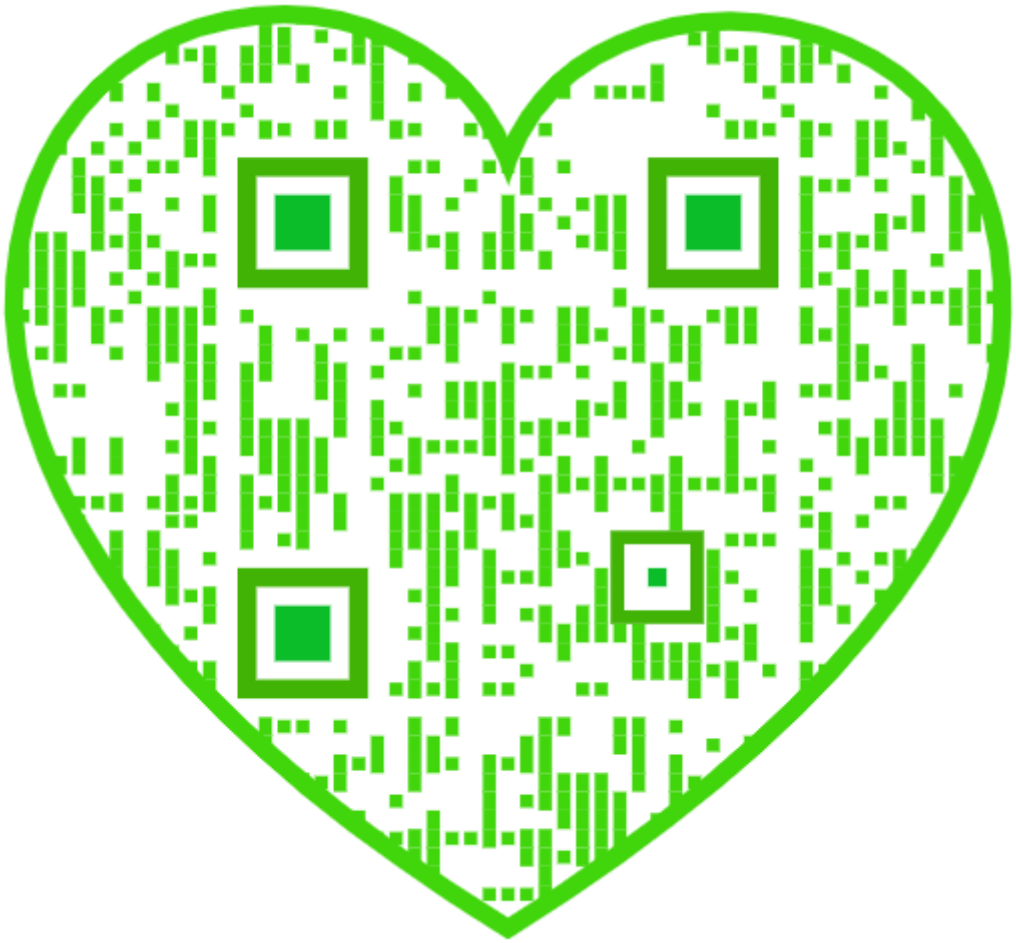
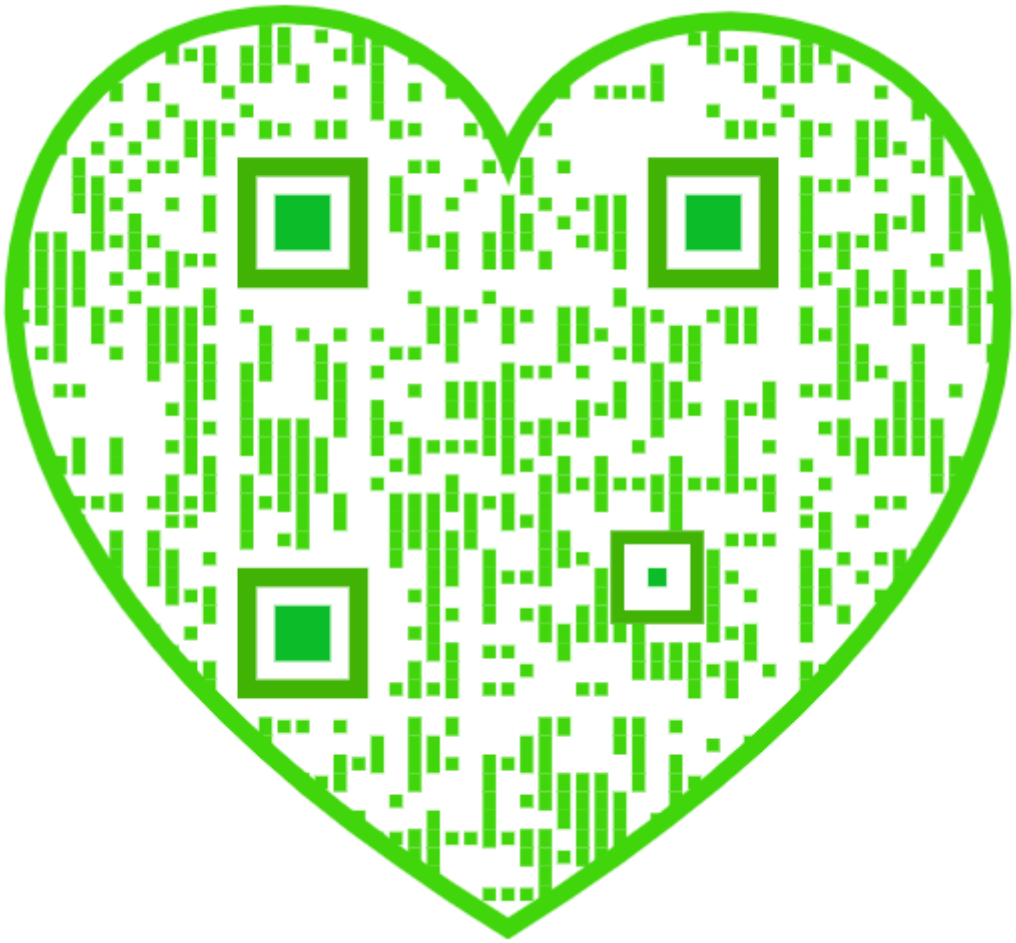




SCIENTIFIC AMERICAN

NEW-YORK, THURSDAY, JANUARY 15.

BACK NUMBERS.—We are constrained to allude to this subject again, for the purpose of correcting a typographical error which escaped our notice at the time of its insertion, and by which we were made to promise that the back numbers would be re-printed *in a few days.* It should have read "a few weeks." We shall furnish them in the course of the present quarter.

HOTELS AND READING-ROOMS.—Being desirous of having this paper more extensively seen or heard of we have decided to furnish it to hotel keepers and reading rooms for one dollar per annum, being half the regular price.

AGENTS WANTED.—Many travelling and local agents are wanted, to introduce and extend the circulation of this paper, in every principal village in the United States.

Science of Mechanics.

(Continued from No. 17.)

HYDRAULICS.—The weight and pressure of the atmosphere on the surface of water, is equal that of about thirty feet depth of water, or nearly 15 lbs per square inch. If, then, a long hollow cylinder be placed vertically over the tube described in our last number, and the air be exhausted from the cylinder prior to the induction of water, the projection of the stream of water, when admitted, will extend to the height of thirty feet above the surface of water in the reservoir. If the air be exhausted from a long vertical tube, the lower end of which is immersed in the surface of water, the water will rise about 30 feet high in the tube, and there remain stationary This elevation of the water is occasioned by the pressure of the atmosphere on the exterior water, from which pressure the water within the tube is relieved. This atmospheric pressure may be in some measure illustrated by a very simple and pleasing experiment:—fill a tumbler or wine glass with water, and lay a piece of common writing paper on its surface; hold the paper in its place with your hand, while you invert the glass—you may then remove your hand from the paper, holding the glass with its bottom upward, and the paper will not fall, nor the water be spilled. If two tumblers containing any quantity of water, be placed together, and a small leaden tube, filled with water, be bent over the top of the sides of the glasses, so that each end of the tube may be immersed in the water within the two glasses, the water will run through the tube, over the sides of the glasses, from the one which contains the most water, into that which contains the least, till the water in both becomes equal or level. This tube, or any one that is used to convey water on this principle, is called a Syphon. The atmospheric pressure on the surface of the water, keeps the tube filled, and while it is full, the water in the two glasses seeks its level thereby as naturally as it would by a horizontal communication. On this principle, water may be made to flow through an aqueduct from a pond or river, over a hill nearly thirty feet high; provided the outward, or opposite termination, be carried a little lower than the surface of the water. A very curious experiment may be made with the syphon, and which is termed the Intermittant Fountain, and goes to explain the mystery of the naturally intermittant Springs. Fix a syphon through the side of a small wooden vessel, near to the top, bending the ends downward, and place another vessel ander the outward end of the tube; let the second vessel be a little lower than the first. Then convey a small stream of water,—less than the capacity of the syphon—into the first vessel. The consequence will be, that when the first is filled up to the level of the top of the syphon, the water will commence running out at the first vessel much faster than it runs in, till the surface descends to the end of the syphon, when its eduction suddenly ceases until the surface again becomes elevated to the highest part of the tube; thus the alternate action will be perpetual, and if the syphon is large in proportion to the vessels, the appearance will be quite interesting. If the tube is small,—about an eighth of an inch in diameter,—the second vessel may be dispensed with altogether, and the operation will go on, alternately without it, discharging the water in the open air.

To be continued.

GIVING CREDIT.—It is well known that we have never been very tenacious about having our articles credited, thinking it a sufficient compliment to have them extensively copied. But when we see, as in one instance last week, nine of our originals copied into one paper, all without credit except two, one of which was accredited to a "New York paper," and the other to a scurrilous organ of defamers, thieves, and knaves in general, or to the "Police Gazette," we think it about time to consider the propriety of giving a hint on the subject, or of placing a check on our exchange list.

ADVERTISING.—We can accommodate a few more advertisements, and would be grateful to our patrons for favors in this line. It must be obvious to all, that an advertisement in this paper will naturally receive much more attention from its readers, than in a closely printed advertising paper; and that this paper, circulating as it does in every State in the Union, affords a better medium for advertisements of machinery and mechanical apparatus, &c., than any other in the city.

ILLINOIS FARMING.—It is stated in the Alton Telegraph, that a Mr. J. G. Chandell has realized the past season, fifteen hundred dollars in cash, from the produce of a farm which has been but three years under cultivation, and that without any other assistance than that of his two sons, except a few days of extra help in harvest time, amounting in all to less than $100.

The Art of Painting.

(Continued from No. 17.)

PORTRAIT PAINTING.—Most portrait painters, procure their colors in a dry state, and grind them in small quantities as they have occasion to use them; but a great variety of colors are kept ready ground, and put up in metallic tubes, at the artists' finding stores. Linseed oil is the medium in which colors for this purpose are ground; but the colors are usually diluted with spirits of turpentine and tempered with a little japan or other drying ingredient. With regard to the requisite brushes and pencils, the best way is to provide a full variety, and use such as are found most convenient. The brushes and pencils may be kept in good order by being suspended, the points downward, in a vessel of linseed oil, but without reaching the bottom. Portraits are usually painted on twilled cotton cloth, stretched on suitable frames, and painted of a stone color—that is, a mixture of white lead, yellow ochre and black. A painted board will answer every purpose for a learner or amateur. A room for this purpose should have but one window open, and that elevated. The artist seats himself with his back to the light, and his subject before him, with the face inclined a little to the right. He first makes a sketch of the outlines and features, with a fine chalk pencil, rubbing out and correcting, until he is satisfied with the form and proportions. In this process we should recommend that the learner commence at the top of the head, and extend the line both ways as low as the ears; observe the distance from the top of the head to the top of the forehead, and sketch the hair over the forehead and on the right side; extend the line from the top of the forehead down the right side to the eye-brow; then sketch the eye-brow, and extend the line down the right side of the nose, and sketch the end of the nose with the nostrils; then draw the right eye, and then the left,—measure well with your eye the distance between the two eyes, and form the left eye-brow; extend the outline from the right eye-brow to the chin, and thence to the left ear,—draw the ear and the hair on the left side. Draw the centre shade on the upper lip, to the mouth, and the shade on the right of the centre; sketch the mouth, observing attentively the form and extent of the upper lip, and the position of the terminations of the mouth, relative to the nose, or to supposed lines descending perpendicularly from the sides of the nose: sketch the shade under the mouth, and proceed to draw the coat-collar, shoulders, vest, and cravat. Paint several parts between the outlines, with colors similar to those eventually intended. The proper ground for the flesh color is a neutral tint, composed of white lead, colored several shades with a mixture of blue, yellow and red; but it is better to apply, in the first instance, colors as near as possible to what is expected to be required in finishing, applying light colors where light is required, and darker colors on the shaded parts, strengthening the outlines with dark colors. It is better, however, to paint to dark than too light. The adaptation of the shading to the complexion must depend on sight and judgment, as no rules can be given; though it may be remarked that the best artists use a larger proportion of green and less of red, in shading the face, than the less accomplished. The foregoing directions are, in some respects, peculiarly applicable to the portraits of gentlemen. The proper position for ladies, while sitting for a portrait, inclines a little to the left, and consequently, in the process of drawing the outlines, preference is given to the left side, instead of the right, as in the case of gentlemen. In either and all cases, when the first coloring is dry, the whole face is required to be painted over again, still reserving the lightest and brightest touches to the final finishing; though it may be supposed that a *perfect* artist would, in all cases, apply the right colors at first, and thus perfect the work with a single coat. The process of painting portraits in miniature will be given in another number under the head of *Miniature Painting.*

To be continued.

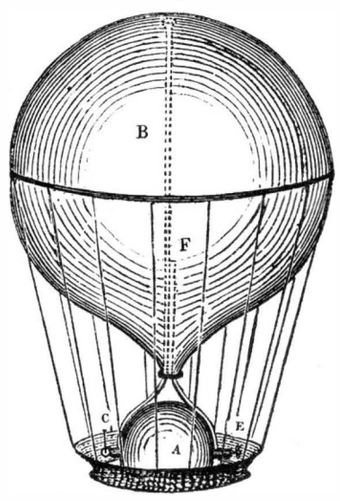
MENDING STEEL PENS.—But few people are aware of the fact, that ordinary steel pens may be made to perform at least four times their usual service, as easily and with as little trouble as that of mending a common quill pen. The steel pen usually fails in the first instance, by having the corners of its point worn off, which prevents the ink from readily taking to the paper. This may be usually corrected in a minute or less by means of a fine flat file, such as is used by watch makers, and may be procured for a shilling. Hold the file in a horizontal position, or let it lie on the table, with its point from you. Then place the point of the pen on the point of the file, holding the pen on a vertical position with its back a little inclined towards you; draw the pen towards you, gently pressing the file. Repeat this two or three times as the case may require. Then hold the pen nearly in a horizontal position with its point from you, and with one side of its nib resting on the file, draw the pen towards you, repeating the operation with both sides of the nib, till, by trying it with ink, you find it sufficiently pointed. A small magnifying glass is convenient in this case, but the operation may be very well performed without it.

CURIOUS ARTS AND INTERESTING EXPERIMENTS.—We are willing it should be distinctly understood that *every article* inserted under thir head, in this paper, is strictly genuine and practicable, and such only as we are practically acquainted with. Whether, as such, they are any more valuable than the miserably absurd and humbuggical recipes which are constantly floating through the many public journals, our readers are invited to judge.

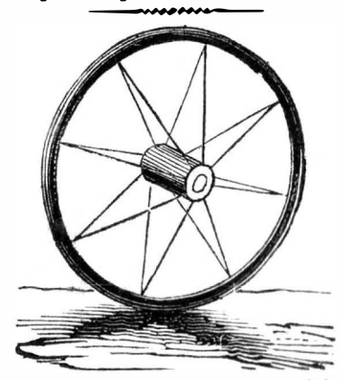
CURIOUS AND VALUABLE.—A volatile oil called *Styrole*, has been recently produced by the distillation of storax, and possesses properties which are likely to render it extremely useful in the arts. In the ordinary temperature it is a limpid fluid; but when heated to a certain point, it becomes a colorless s transperant glass, and remains so when it becomes cool. We hope to obtain further intillgence on the subject.

New Inventions.

REYNOLD'S IMPROVED BALLOON.



EXPLANATION.—It is well known that in balloons of ordinary construction, the aeronaut has had no other means of descending than that of discharging a part of the gas from the balloon; which gas thus becomes lost, and the balloon must be replenished with new, before it could again ascend. But the improvement, invented by Mr. James Reynolds of this city, is intended to remedy this inconvenience, by means of an apparatus for condensing, occasionally, a part of the hydrogn, and holding it in readiness to be applied to the inflation of the balloon when occasion requires. The improvement consists of a light metallic globe A, placed in the car of the balloon, B for the purpose of holding a considerable quantity of compressed hydrogen gas, as occasion may require. This globe is furnished with an air pump, C to be worked by hand, or otherwise adjusted to be worked by treadles, operated by the feet of the aeronaut; and communicating with the balloon by a small pipe, which extends upward from the pump to the interior, and nearly to the top of the balloon, at D. By means of this arrangement, the gas may be drawn from the balloon, and compressed into the spherical chamber, in quantity sufficient to induce the balloon to descend: and when the balloon is to be again expanded, the compressed gas is liberated by means of a valve, E, on the side of the globe opposite the pump, and ascends to the balloon through the pipe, F. The expense of the apparatus is inconsiderable, and we should expect that those who take an occasional sail among the clouds, for pleasure or otherwise, would adopt this improvement without hesitation.



MUNSON'S SUSPENSION CARRIAGE WHEEL.—This improvement is very simple in construction, and requires no references. It consists of a metallic rim and a hub, supported in the centre by a series of iron wires, extending from each end of the hub to the rim. These wires have screw threads, right and left, cut on the opposite ends thereof, whereby they are screwed into the hub and the rim at the same time. It is well known that a good iron wire, one-fourth of an inch in diameter, will sustain a draught of 5,000 lbs.; and it may of course be inferred that a combination of such wires, arranged as shewn in the engraving, will sustain a weight of at least 15,000 lbs. applied to the axle. This wheel is easily and cheaply constructed, and we see no good reason why it should not readily come into extensive use. It was invented by Mr. Medad Munson of Tompkinsville, N.Y., who intends securing a patent therefor, as soon as it has been sufficiently tested.

ROOSEVELT'S INVULNERABLE STEAM-BATTERY.—This invention, which promises immense advantage in the defence of harbors, has been recently examined by a committee of the National Association of Inventors, who reported favorably to the invention, as far as its principles and construction were to them explained; but the inventor, Clinton Roosevelt, Esq., of this city, entertaining an intention of securing patents therefor in England, and other European nations, deems it inexpedient to expose his invention in full, until the requisite measures are taken for securing those patents. The apparatus is said to be perfectly secure against the arms of an enemy, and may advance boldly and rapidly to any armed ship, and destroy the same by a single discharge. We shall probably be able to present to our readers a full description of this extraordinary invention in a few days.

BAGLEY'S EVERLASTING PENS.—Much has been said on the subject of the *Diamond Pointed* Gold Pens, manufactured by Mr. A. G. Bagley, 189 Broadway; but the highest praise we have seen of them, has rather come short than exceeded their true merits. We have not had the use of one long enough to prove its durability; but we have known instances of their having continued in good order for two years or more, although in frequent, if not constant use. They are superior, in the first instance, to the best steel pens, and in consideration of their durability, they are believed to be the cheapest pens now used or known.

WALKING STICKS AND BROOM STICKS.—The ladies of Paris it is said, almost invariably carry small walking sticks. A cotemporary thinks the best stick a woman can use is a broomstick. A benedict significantly hints that this depends altogether upon how it is used.

Curious Arts.

TO PRODUCE THE EXACT LIKENESS OF ANY OBJECT INSTANTLY ON PAPER.—This may be readily effected by laying the paper on a table, and holding a double convex lens (a common sun-glass) over it, and then placing a mirror over the lens in an oblique position, so as to face partly towards the object that is to be represented. The rays of light, passing from the object to the mirror, will be reflected downward through the lens, and produce the likeness of the object in full colors on the paper. This experiment may be easily made in the evening, by reflecting the flame of a candle in this manner, which will appear very brilliant on the paper. But in order to render the reflection of an object distinctly visible by daylight, it may be requisite to exclude all the light from the paper, oxcept what falls through the lens. In all cases the lens must be placed at a distance above the paper, according to its focus, at the distance at which it would contract the rays of the sun to the small point. A very convenient camera obscura, for drawing landscapes, or even portraits, may be constructed as follows: Make a box of boards, in the form of a regular cube, being one foot in length breadth and he ight; bore a hole, of one inch diameter, through the centre of the top; and on this fix a double convex lens, the focus of which must reach the bottom of the top. Make an aperture of about six inches in length, and one in breadth, through one side of the box at the top, by shaving off, or hollowing the edge in such a manner, that when you put your face to the aperture, to look into the box, it will exclude all the light except what falls through the lens. Make a hole through each end of the box, near the bottom large enough to put in the hands, with paper and pencil. On the top of the box, on the right and left sides of the lens fix two pieces of boards, which may be about four inches high, eight inches long, and three inches distant from each other. Between these boards, fix a piece of looking glass, three inches square, and facing from you; the lower edge of the glass being near the lens, on the side towards you: and the upper edge inclining towards you about thirty degrees from a perpendicular. Directly over, and nearly four inches above the lens, place another mirror, the centre of which must face directly towards the lower edge of the first. Cover the glass box so as to exclude all the light from the glasses except what falls on them horizontally from objects directly in front of you, and place a sheet of paper on the bottom of the box inside. The rays of light, passing from objects in front, will be reflected from the first mirror to the second, and from the second, through the lens to the paper, where you will have a perfect similitude of the objects in view, in full colors, and true perspective, and may trace them on the paper with a pencil or pen.

TO CAST IMAGES IN PLASTER.—For this purpose a model of the figure that is to be cast, must be provided, and suspended by a rod or staff, one inch in diameter, and fixed in the top of the head. This model may be made of wood or chalk, or any other substance that is smooth, and sufficiently cohesive to support itself. This being prepared, mix fine sulphate of lime with water to the consistence of soft putty, and having brushed some olive oil over the model, cover it completely with the plaster, which must be applied and spread over it with the hands, to the depth of two inches or more. When the plaster is nearly dry, divide it into several parts with a thin blade, so as to take it off from the model without breaking any part When the several parts of the model are dry, oil them inside and put them together as before, and bind them with pieces of tape or twine; set the mould upright, and fill it with a fresh mixture of sulphate of lime and water, of as much consistence as may be poured in through the aperture at the head. This plaster should be poured into the mould as quick as possible after being mixed, otherwise it would become too stiff and be spoiled. The plaster in the mould will soon cohere, so that the mould may be taken off, and the figures set up to dry; and the mould being oiled and put together again, is ready for another cast.

AFFINITY OF METALS.—Some will be surprised to learn that different metals are capable of being mixed or amalgamated while in a cold and solid state; but such is the fact. When copper is covered with a coating of tin, or solder, the tin will in a few months amalgamate with the copper, penetrating to the depth of a tenth of an inch, and rendering the copper thus far, brittle and nearly worthless. Tin has also a similar effect on brass. When gold leaf is placed in contact with copper, and is kept some time in contact by pressure, the gold and the copper will unite, and the gold will be found to have penetrated into the copper. If the copper and gold be gently heated, the gold will disappear while the temperature is far below the fusing point, and will actually sink below the surface of the copper, as may be seen by filing and examining the edge of the copper when cold. Mercury will penetrate the surface of either gold, copper, or tin, and in some instances to the depth of an eighth of an inch; and it is not unlikely that it might be proved by a course of experiments, that most of the metals may be made to unite with each other by long continued and close contact.

CENTRIFUGAL FORCE.—The centrifugal force, is the tendency which all revolving bodies have, to fly off in a tangent; it is merely the natural tendency of inertia—in this case converted to momentum—to follow a rectilinear or straight forward motion. To ascertain the centrifugal force of a revolving body; multiply the diameter (or double the radius) in inches by the square of the number of revolutions per second, and this product by the twentieth part of the weight of the revolving body.

SPECULUM METAL.—The best composition yet discovered, for reflectors of telescopes and mathematical instruments, is composed of 32 parts copper, 15 parts tin, one of brass, one of silver, one of white oxyde of arsenic. Of seventy one different mixtures, Dr. Maskeline says he finds this to be the hardest, whitest and most reflective.

VARIETY

During a recent scarcity in China, many thousand children were abandoned by their parents. A Catholic priest employed several men to go and baptise them by sprinkling water in their faces, as they lay dying.

A house in Centreville, Md., was lately set on fire by a pig. The little incendiary caught hold of an apron, which it dragged to the fire, and then under the bed, whereby the flames caught and destroyed the house.

We lately noticed a proposition to export a few thousand "John Smiths." A movement of this kind appears to be already going forward, as we observe the name several times in the Acadia's list of passengers out.

A story is reported of a Deacon Brown, of—no matter where—who carries on a dairy so large that twelve sawmills are kept in operation by the buttermilk flowing therefrom.

The newly invented steel church bells are said to be afforded so cheap that a chime of seven, correctly toned, may be bought for $200, and may be heard at the distance of two miles.

A large wolf recently located in Lebanon township, Pa. He was subsequntly shot; but the dogs of the neighborhood had caught the mutton dealing propensity, and destroyed forty sheep in one night.

Rev. Mr. Blanchard, of Lowell, is said to have drawn a *rag baby* in a lottery, recently, got up by the lady members of his church. Somebody says it was lucky for him that 'twant nothing else."

A Pin Factory in operation at Cabotville, Mass., turns out two hundred and forty pins per minute, from each machine in operation. We are not informed how many machines are employed.

A large quantity of powder in the dry house belonging to the powder mills of Mr. John Carhin, of Bennington, N. H., caught fire not long since, and was all burnt up.

Bonaparte was accustomed to attach much importance to the education of youth by their natural instructresses, their mothers. What a pity that so few mothers are qualified for this duty.

The arctic fox is said to possess the art of barking in true ventriloquism, so that the sound appears to be several rods distant, when in fact the animal lies at your feet.

It is supposed by many, that the generally prevalent potato rot is a natural decay of the vegetable principle by exhaustion, or old age, from long continued propagation by tubers.

The drying boiler, of a paper mill, in wilmington, Del., lately exploded, and was thrown to the distance of one hundred and fifty feet. The weight of the boiler was over two tons.

An iron safe was lately stolen from a store in Athens Ga., and carried some distance; but after all the thieves could not open it, and it was found with all safe the next day.

An U. S. officer writes from Fort Smith, Ark., "that the whole country is filled with emigrants—every avenue is choked up with wagons and cattle of this moving world.

The Post Master General complains of the abuse of the franking priviledge, and intimates that members of Congress, are in this subject, no more honest than they should be. Very probable.

Hon. Henry Clay lately took passage down the Ohio, on board the steamer Old Hickory; but it was "no go," for Old Hickory ran into a dam, and Mr. Clay was glad to escape to the shore.

Cassius M. Clay discoursed in the B. W. Tabernacle on Monday evening, to an audience estimated at six thousand. The subject was the slave system.

Mr. Camp, one of the editors of the "Police Gazette," was arrested on Monday, on a charge of contempt of court, and not being ready to pay the fine, was, very properly, locked up in prison.

The Armenian converts, at Constantinople, have of their own accord formed a Bible society, and intend extending the Scriptures to the Armenian nation, with comments.

The Governor of Virginia complains of the inattention to education in that State, estimating that there are in the State 120,000 white children of suitable age, who attend no school whatever.

An exchange paper advertises a patent medicine, which to be effectual, must be taken internally, externally, and eternally, or until it cures.

Six years ago, last Thursday, the steamer Lexington was burnt on Long Island Sound, whereby more than a hundred lives were destroyed.

A brisk trade is going on in Texas with the Mexican merchants, a large number of whom have arrived there for that purpose.

John Neal says that "graceful women should move as if they were swimming." We can't imagine what sort of a gait that would be.

The Roman Government has resolved to hire two more Swiss regiments, for the purpose of keeping its own subjects under the required subjection.

The eight bells intended for the chimes of the Trinity Church, New York. have arrived from England, and will soon send forth their merry music.

At Fredericton, N. B. 26th Dec., 1845, the thermometer was 26 degrees below zero; at Milwaukie, Wisconsin, Dec. 20, 14 degrees below.

A large number of Engineers have arrived in Canada from England. Great preparations are making for something in that province.

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For the Scientific American.

Rise in your Native Strength.

BY A. W. BUTLER.

Rise in your native strength,
Mechanics of the land!
And dash the iron rule
From rude oppression's hand;
By all the might of mind,
Assume the place of men—
Heed not the scoff of those
Who scorn the artizan.

Ye sinew of a State,
Your nation's pride and boast,
Whose glory crowns her hills,
And guards her native coast,
Ye are her wealth in peace,
Her vital breath ye are,
And when death's bolts are hurl'd,
Ye are her shield in war.

By the eternal sword,
To stern-brow'd justice given;
By Freedom's holy self,
The might of wrong is riven!
Strong monuments arise,
In record of your praise;
Transmitting down your names
To men of other days.

Proclaim to all the world
Your usefulness and worth;
Speak out with trumpet-tongue,
Ye mighty men of earth;
Was not the soil ye tread
Won by your fathers' blood?
Then on oppression's self,
Roll back oppression's flood.

Complaints of the Poor.

And wherefore do the poor complain?
The rich man asked of me;—
Come and walk along with me,
And I will answer thee.

'Twas evening, and the frozen streets
Were cheerless to behold;
And we were wrapt and coated well,
But yet we felt the cold.

We met a young bare-footed child—
She begged loud and bold,
And therefore had she came abroad,
When winds were blowing cold.

She said her father was at home,
And he lay sick in bed;
And therefore was it she was sent
Abroad to beg for bread.

We saw a woman sitting down
Upon a stone to rest:
She had a baby at her back,
Another at her breast.

I asked her why she loitered there,
When the wind it blew so chill;
She turned her head and bade her child
That wept aloud, be still.

She told us that her husband served
A soldier far away,
And therefore to her parish she
Was begging back her way.

We met a girl, her dress was loose,
And sunken was her eye;
Who with a wanton's hollow voice,
Addressed the passer-by.

I asked her what there was in guilt
That could her heart allure
To shame, disease, and late remorse—
She answered, she was poor.

I turned me to the rich man, then,
For silently stood he;
You asked me why the poor complain,
And these have answered thee.

The Pearl of Great Price.

This world their fancied pearl may crave,
'Tis not the pearl for me;
'Twill dim its lustre in the grave,
'Twill moulder in the sea;
But there's a heart of price untold,
Which never can be bought with gold,
The sinking soul 'twill save;
Oh, that's the pearl for me.

The miser knocks at Mammon's gate,
'Tis not the gate for me;
From morning dawn, till evening late,
At his bolted door is he;
But there's a gate that leads to bliss,
And he that knocks by faith at this,
Shall ne'er be called to wait;
Oh, that's the gate for me.

Let pleasure chant her syren song,
'Tis not the song for me;
To weeping it will turn ere long,
For this is heaven's decree;
But there's a song the ransomed sing,
To Jesus their exalted King,
With joyful heart and tongue;
Oh, that's the song for me.

THREE THURSDAYS IN ONE WEEK.—One of our exchange papers contains a long article, in explanation of the possibility of three thursdays in a week. We shall attempt to do it in a 'short way,' Let a vessel sail east round the world, and arrive on Thursday, according to their reckonings. On the day following let the crew land, they will find it *thursday* on shore. On the next day let them board a vessel which has just arrived from a cruise round the world, sailing in a westerly direction; they will again find it *thursday* on board that ship. Thus they will find three Thursdays in one week.

The printer wants two lines to fill out this column, but we have no *small* subjects on hand.

National Association of Inventors.

Most of our readers have already been informed that an association of inventors has been duly organized in this city, for the ostensible purpose of encouraging and protecting, as far as may be in their power, the right of inventors of new and useful improvements in the arts. The constitution of this association was adopted on the 6th of November, after which the members proceeded to the election of officers, consisting of President, eight Vice Presidents, two Secretaries, and an Executive Committee, consisting of ten members. Since the organization of the Association, several meetings have been held, a code of By-Laws adopted, several committees appointed, new inventions examined, and various subjects discussed, and many new members added. We have hitherto refrained, or neglected, to say much on the subject of this movement of inventors, partly on account of the embarrassing confusion into which our business was thrown by the destruction of our office in Spruce street, which prevented our having time to attend and report the proceedings of the meetings, and partly from reasons which we may, or may not, hereafter explain. The association appears to be making fair progress at present, and our readers may expect further intelligence on the subject of the policy and proceedings thereof, in future numbers.

MORE LEGACIES.—Alvin Smith, late of Hatfield, Mass., recently deceased, and having no natural heirs, very generously gave all his extensive property to—orphan children? No; but to be managed by trustees, and invested as a permanent fund for the ostensible benefit of orphans and poor children, provided the trustees do not use it up. We have seldom heard of an instance which more strikingly illustrated the "ruling passion strong in death," than this case affords, inasmuch as the donor, in giving $200,000 to Northampton for the establishment of a school, required that the money should not be applied to that purpose, until the above named sum had doubled. The only pleasant feature in these bequests, is a provision for paying certain sums to each *worthy* young man or woman upon the event of his or her marriage. Of course none but the *wealthy* will be considered *worthy* in this case. If the donor had devoted one half of this property to charitable purposes while living, it would have left him a more honorable memory.

TRANSPLANTING TREES.—Winter is the proper time for transplanting trees of larger size than three or four years growth. Even trees a foot or more in diameter may be removed and re-established without injury when the ground is frozen to a considerable depth. For this purpose, a ditch is cut round the foot of the tree, several feet distant from it, and two or three feet deep. A rope being secured by means of a ladder or a kite to the top of the tree, and extending off to a distance, it may be easily pulled over, raising at the same time a large quantity of earth adhering to its roots. Then being removed by sleds or wheels to the place of its future location, set upright in a cavity prepared to receive it, and secured by guy-ropes or braces in opposite directions, to support it till the roots have grown so as to take hold of the surrounding earth. The earth must be carefully placed round and adjusted to the roots, and a quantity of stones may be placed round the tree for its better security till new roots have grown. The tree should be placed in the same position with regard to the points of compass that it formerly occupied.

THE HARDEST MASTERS.—The Senior Editor of the Southern Christian Advocate and Journal, says that Northern men, who become slaveholders on speculation, are much more cruel and exacting towards the slaves than the native Southern men, insomuch that if gold could be squeezed ont of the pores of his slaves, he would employ a hydraulic press for that purpose. He is the terror of all slaves, and despised by all Southern masters. The statement accords with certain opinions which we have long entertained, and we think it not improbable that many of the reports of cruelty to slaves, are made by the identical authors of the most atrocious acts of crueity in that line.

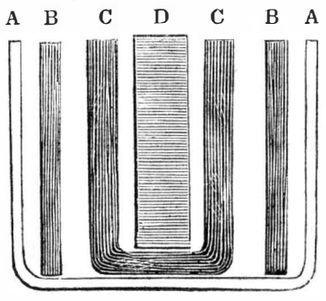
NO TIME TO READ.—How often do we hear men excuse themselves from subscribing to a paper or periodical, by saying they have 'no time to read.' When we hear a man thus excuse himself, we conclude he has never found *time* to confer any substantial advantage, either upon his family his country or himself. To hear a freeman thus express himself is truly humiliating; and we can form no other opinion than that such a man is of little importance to society. Such men generally have time enough to lounge about the bar-rooms, or gossip with their neighbors, smoke segars and discuss political prospects; but have no time to read. Such men have, generally, saucy, uneducated children; unfurnished shops; unsettled bills, and unhappy homes. They live unknown to intelligent society, and die unlamented.

GALVANISING FLOWERS.—It has been demonstrated by experiment that various kinds of flowers may be made to vegetate and grow rapidly, by passing a current of the galvanic fluid through the earth in which the seeds are planted, or the plant is growing. This art has not yet been brought to perfection, but the management of Galvanic electricity is so rapidly becoming familiar, that we may expect wonders to be performed in the flower garden by its means, when smiling spring returns. We shall be prepared to receive orders, and furnish galvanic batteries in trim working order, for 75 cents each.

BAD EFFECT OF THE TEMPERANCE REFORM.—A resident of Chatham, N. H., complains that since the groggery licenses have been withheld from the rumsellers of Fryeburg, Me.,—an adjoining town,—a large number of the Fryeburg topers resort to Chatham for their favorite beverage, in consequence of which, even the deacons of Chatham are fitting up bars and closets with kegs and glasses for the purpose of sharing the profits of the nefarious trade.

Galvanism.

(Continued from No. 17.)



THE MAGNETIC TELEGRAPH.—Our description and illustrations of the electro-magnetic telegraph hitherto, have been restricted to general principles, and such particulars as were easy of illustration. But the wonders of Galvanic electricity, in its applicability to the instantaneous communication of intelligence, do not stop here. Recent research, and close application to the subject, have led to new and important discoveries beyond the extent of human comprehension. We have heretofore spoken of "Grove's Batteries," but shall now give a more full description, in connection with the cut at the head of this article. In a glass cup, A, four inches in diameter and four inches deep, is placed a cylinder, B, of zinc, three-eighth of an inch thick, amalgamated on its surfaces with mercury. Within this zinc cylinder is an unglazed cup, C, of porcelain or similar composition, and within the last a plate of platina four inches long by one and a quarter wide. This porcelain cup is nearly filled with nitrous acid, and the space between that and the glass is filled with a mixture of twelve parts water with one of sulphuric acid. The two metallic plates or parts, the platina and the zinc, being connected by a circuit wire, this apparatus constitutes a battery complete in itself: but a series of from three to a hundred cups and contents, connected consecutively, that is, the platina of the first to the zinc of the second;—the platina of the second to the zinc of the third, &c., is most generally used, and constitutes, altogether, neither more nor less than *a battery*. It must be understood that the circuit wire, leading from the last platina, must ordinarily, after extending through its required circuit, again return to the first zinc of the series, though there may be some exception to this rule, as we shall subsequently shew. The advantage of connecting the *pairs* consecutively, consists in increasing the intensity of the galvanic fluid, but without increasing its quantity. If a larger quantity is required, the plates are connected *directly*, that is, all the platina plates are connected to each other, and all the zinc likewise, thus virtually constituting a single pair of large plates; and this mode of connecting is used when the production of heat, or a powerful magnetic draught is required. But for extending the magnetic influence to a great distance, intensity rather than quantity is required, and the plates for this purpose are connected consecutively, as above described; and it has been substantially ascertained by recent experiment that fifty pairs thus connected, and with the aid of certain helical arrangements, are sufficient to extend the magnetic influence for telegraphic communication, *one hundred miles*. The helices used in the telegraphic apparatus, are much larger than those represented in our illustrations, and contain about 300 feet of wire in each, or 600 to each magnet. With regard to the exception above alluded to, there is proved to be no necessity for doubling the wires the whole length of the telegraphic line, thus forming a perfect wire circuit; but as a substitute therefor, the positive wire—that leading from the negative pole—after passing the register machine, terminates in a plate of copper, deeply imbedded in the earth, while another plate is also sunk in the earth in the vicinity of the battery: thus the earth itself is made a conductor, or rather a re-conductor of the galvanic fluid, instead of a copper wire. There have been yet more remarkable discoveries, quite recently made, on this subject, but of which we shall defer a description till future numbers.

(A description of an important appendage to the telegraph register machine, is given on our first page.)

To be continued.

RATIONAL TOYS.—We like to see children well supplied with a good variety of toys; yet not the frivolous, useless, and even ridiculous toys with which most modern toy shops abound, but with such as will instruct while they amuse; and which, by their use, will impart vigor to both the body and mind of the child who enjoys them. For the infant there may be nothing more suitable than the ivory mallet or rattle, by weich he acquires the use of his arms and hands, and will learn something of the philosophy of concussion and report. At the age of two years, he will derive much instruction in the nature of projection, inertia and momentum, from the use of balls of ivory or wood. A little cart by which he can transport articles about the room, is also useful at this age. As he advances he should be supplied with various rational pictures, with slate, paper and pencils. A quantity of toy bricks, with which he can form arches and edifices; a boat with a trough of water to sail it in; a magnifying glass with which to examine minute objects; cards of letters first, and afterwards of numbers and of words with which he can form sentences; a box-rule for measuring, also dividers or compasses; these and many others will instruct while they amuse, and are suitable for both sexes; and should be furnished to every child, to the exclusion of toy horses, dogs and other frivolities.

JEFFERSON'S RELIGIOUS SENTIMENTS.—One of the last letters written by the illustrious Thomas Jefferson, dated at Monticello, Feb. 21, 1825, contains the following language: "Adore God: reverence and cherish your parents; love your neighbor as yourself; and your country more than yourself. Be just:—be true—murmur not at the ways of Providence: so shall the life into which you have entered, be the portal to one of eternal and ineffable bliss."

Literary Notices.

WEALTH AND BIOGRAPHY OF THE WEALTHY CITIZENS OF NEW YORK.—We are happy to announce that the tenth edition of this extraordinary, useful and interesting work, *revised and improved* has been issued at the Sun Office. It contains, alphabetically arranged, the names of the most prominent capitalists, whose wealth is estimated at *our hundred thousand dollars and upwards*, with the sums appended to each name, with genealogical and biographical notices of the principal persons. We are not apprised of the extent of this edition, but in view of the present rush for the work, we have little hesitation in saying that those who do not apply in season, will be too late to procure a copy. We can not be expected to feel totally indifferent to this publication, with its allusion to some of us in the *Sun Building*, when it is remembered that there are no other two newspaper publishers in the city whose aggregate wealth exceeds that of those of the Sun and the Scientific American.

THE LITERARY EMPORIUM.—A compendium of Religious, Literary, and Philosophical Knowledge. This is the title of a splendid volume of nearly 400 pages, abounding with superb steel-plate engravings, and lithographic prints in full bright colors. Its contents consist of stories, narratives, and poetry, in beautiful language, of lively, entertaining, and instructive character, and the binding is in rich style of elegance and taste. Such a book in a family, during the winter months, besides sweetening the time as it passes, will in measure prepare the way for the enjoyment of Spring. Published by Wellman, 118 Nassau st.

THE PRACTICAL ASTRONOMER, is another of those excellent scientific works, which shine among the book-trash of the day, as diamonds among gay but useless fossils. This work comprises Illustrations of Light and Colors; Practical Descriptions of all kinds of Telescopes; the use of the Equatorial-Transit; Circular and other Philosophical Instruments. Also a particular account of the Earl of Ross's large telescopes; and other topics connected with astronomy; by Thomas Dick, L.L.D. This useful work is just published by Harper & Brothers, 82 Cliff street.

THE MECHANICS COMPANION.—As we expected, the first edition of this excellent work is going off rapidly. It may be doubted whether there was ever a book published which contains so much useful scientific intelligence, in so small a compass, and at so cheap a price. We have a few copies of the bound volume at $1,12, and some beautiful gilt copies in morocco, in pocket book style, with apartments for money and papers, for $1,50. Surely no operating mechanic should be without one.—See advertisement

THE SCHOOL GIRL IN FRANCE.—This is a small volume, published by Wellman, in the form of a very interesting story or narrative, and is calculated to prove a warning to protestants against the snares of Popery lurking in Catholic Seminaries. Those who feel interested in the prevalence of Protestantism against Popery, will of course patronize the work.

THE PULPIT.—A monthly magazine bearing this title, and containing Sermons, Sketches, and Plans of Sermons, from living Ministers, with other miscellaneous matter, is edited and published by O. Scott, No. 5 Spruce st. From a brief examination of the work we judge it to be not only instructive but peculiarly interesting to those who are religeously disposed. We shall notice it again after further examination.

A BRILLIANT PAPER.—The "Oasis," published at Nashua, N. H., is among the most welcome of our exchanges. We are inclined to envy its editor his ability at giving every subject of his pen a cheerful countenance.

THE MAGNETIC TELEGRAPH.—The line between Philadelphia and Norristown commenced operations about a week since. The line between this city and Philadelphia, is finished and has commenced operations, though the arrangements for business operations are not yet perfected. The line between this city and Boston is expected to go into operation in about a month. The line between Hartford and New Haven is nearly completed. The wires are all up between Utica and Schenectady, and the line will soon commence operations.

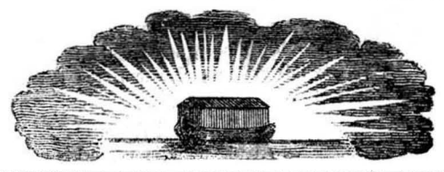
SALE OF A RAILROAD.—The Raleigh and Gaston Railroad was recently sold at auction, at Raleigh, N. C. The only bid made was by Governor Graham, of $263,000 being the amount due the State under the last mortgage. Rather a large sale for a single bid.

RAIL ROAD IN HUDSON ST.—The Committee of Board of Assistants held its final meeting on this subject on Wednesday evening. Very little additional opposition was made to the project, but a number of citizens spoke in favor of the utility and comfost of the project, and the necessity of affording some relief to the travel in Broadway.

CURE OF INFIDELITY.—A celebrated French infidel, being, introduced to the pious Fenelon, and spending some time in his society—witnessing the loveliness of his manners and conversation—was constrained to say to a friend—I must not stay in the presence of this holy man; if I do, I shall be compelled to renounce my infidelity; so much purity, so much amiableness, proves religion to be of heavenly origin.

NEW MILLS.—The new block of saw-mills at the Kennebec Dam have been raised for the third time, and *fixed*, notwithstanding the obstructions from the ice and weather. Six saws will be run in the building, and they have already been rented for $900 each.

INJURY BY A SWORD FISH.—The barque Toby, of this port, has been reported as having put into Mozambique, on account of having been damaged by a sword fish.



DO GOOD.—"When?" Now. "Where?" All about you. "What shall I do?" Clothe the naked—feed the poor—visit the afflicted. Speak a word of encouragement to those who are struggling with poverty—to young men just starting in life. There are a thousand ways of being useful, if you have right feelings and are disposed to do good. Where ever you look—in whatever path you thread, you may be useful. All have the means to do something, the poorest and the feeblest, the oldest and the youngest. Let usefulness be the great object of life.

FATE OF THE APOSTLES.—St. Matthew, the apostle and evangelist, is supposed to have suffered martyrdom, or to have been slain with a sword at a city in Ethiopia. St. Mark was dragged through the streets of Alexandria, in Egypt, till he expired. —St. Luke was hanged upon an olive tree in Greece. St. John was put into a cauldron of boiling oil, and escaped death: he afterwards died a natural death at Ephesus. St. Peter was crucified at Rome, his head downwards, at his own request thinking himself unworthy to die in the same posture and manner as his blessed Master. St. James the Great was beheaded at Jerusalem. St. James the Less was thrown from a pinnacle or tower wing of the Temple, and then beaten to death with a fullers's club. St. Philip was hanged up against a pillar at Hierapolis, a city of Phrygia. St. Bartholomew was flayed alive by commapd of a barbarous king. St. Andrew was bound to a cross, whence he preached to the people till he expired. St. Thomas was run through the body with a lance at Coromandel, in the East Indies. St. Jude was shot to death with arrows. St. Simon Zelotes was crucified in Persia. St. Matthias was first stoned and then beheaded. St. Barnabas of the Gentiles was stoned to death by the Jews at Salonica.—St. Paul was beheaded by the tyrant Nero.

Traditions of Nations.

The nations of the earth which have longest possessed a knowledge of letters, have given to the world the most distinct traditions of the great facts in Bible history.

The Chaldeans, several years before the Christian era, talked and wrote about the flood—the destruction thereby of the primitive race of men—the new peopling of the earth by the only family which was preserved. They spoke of the father of this family as having been warned in a dream, concerning the destruction which awaited the world, and that he built a ship, and went into it with his family—that when the flood began to abate, this man, whom they call Xisuthrus, let out birds, which at first returned to the ship, finding no resting place—that when the flood was fully abated, the ship rested upon a mountain, when he went forth to offer sacrifices, and strayed from the rest of the company or family, who went and settled in Babylon. The Xisuthrus of the Chaldeans, was evidently Moses' Noah. The Chaldeans reckoned ten kings before the flood; while Moses counts ten generations.

The Chinese traditions, if they do not absolutely refer to the same person under the name of Fohi, as Moses' Noah; are indeed most singular. They describe their first king as having lived at a time which would make him the contemporary of Noah, or so nearly so, that the difference is a matter of no real moment.

They connect with the life of their first king Fohi, so much that Moses connects with Noah, that it appears as among the greatest of singularities that two nations so disconnected and so unlike, should have preserved the same matter of history or tradition from the ancient date which they had, if indeed no such peculiar circumstances as they relate had taken place!

The Chinese say their first king had no father; that his mother conceived him encompassed with a rainbow, which is an evident allusion to the rainbow's appearing to Noah; with other circumstances similar to the Mosaic account. The Chinese history supposes the residence of Fohi to have been in the northwest province of Ararat, where the ark rested after the abatement of the waters.

The fact that the Chinese may claim to be descended from Noah, or to have had him for their first king, by no means militates against the Mosaic account; inasmuch as all living have descended from Noah.

The Greeks, in ancient times, maintained a belief in the fact of a flood, which had long before destroyed the human family for its wickedness, with the exception of one man, whom they called Deucalion, who, on account of his piety, was preserved and became the father of a new race.

They reported that Deucalion had a large chest, into which he put his family and numerous beasts, and floated safely on the water, until the flood was over.

On the first settlement in Mexico by the Spanish, they were surprised to find in the Mexican manuscripts which they obtained, an account of the fall of the mother of mankind, accompanied by a serpent, together with an idea of the flood, and a single family escaping on a raft. Among them, the observance of every seventh day was maintained.

Similar traditions have been found among other nations where the Scriptures had never been known, where the Gospel had never been published. Upon what imaginary ground these traditions can be accounted for, except upon the acknowledgment that the grand items of Bible history had their origin in facts, is not known.

The Hindoos and others have like traditions, while the Bible alone gives a distinct history. Its credibility, and the united origin of the human race, is very strongly sustained by these facts of existing traditions.

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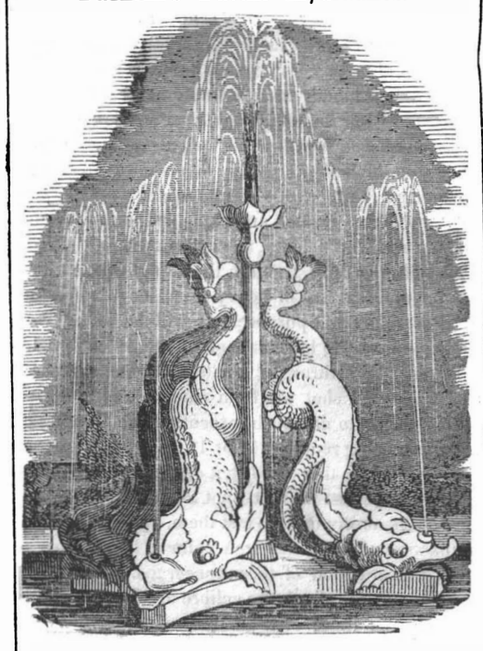

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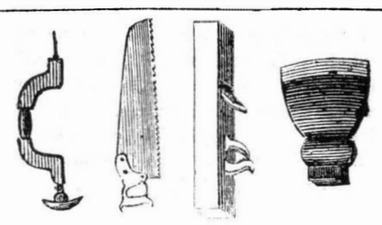

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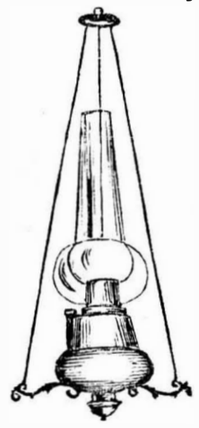

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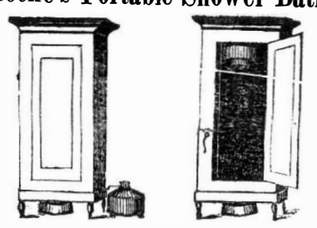

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